

CLAIMS

1. A tapping method for performing tapping process in a punch press, comprising the steps of:

5 (a) engaging a front end of a tap provided at a tapping tool attached to a rotating mold indexing device rotatably provided at the punch press with a prepared hole formed in a workpiece;

10 (b) when the front end of the tap is engaged with the prepared hole, rotating a control motor of the rotating mold indexing device positively to rotate the tap positively; and

15 (c) when it is detected that the control motor of the rotating mold indexing device has rotated a determined number of times, stopping positive rotation of the control motor and rotating the motor reversely, thereby to detach the tap from the prepared hole of the workpiece.

2. A tapping method for performing tapping process in a punch press, comprising the steps of:

20 (a) engaging a front end of a tap provided at a tapping tool attached to a rotating mold indexing device rotatably provided at the punch press with a prepared hole formed in a workpiece;

25 (b) when the front end of the tap is engaged with the prepared hole, rotating a control motor of the rotating mold indexing device positively to rotate the tap positively; and

(c) when it is detected that predetermined time has elapsed since the control motor of the rotating mold indexing device started rotating, stopping positive rotation of the control motor and rotating the motor reversely, thereby to detach the tap from the prepared hole of the workpiece.

3. A tapping device, comprising:

a tap holder provided in a shank body which can be freely attached to a rotating mold indexing device rotatably provided at a punch press so as to be movable in the vertical direction, the tap holder having a tap at its lower end and being provided so as to be movable only in the vertical direction and urged upwards; and

10 a downward movement transmitting means for transmitting downward motion of a ram provided at the punch press so as to be movable in the vertical direction to the tap holder, the downward movement transmitting means being at an upper part of the shank body.

4. A tapping device according to claim 3, wherein a workpiece brace is rotatably provided at a lower end of the shank body.

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5. A tapping device according to claim 4, wherein an oil channel for guiding oil supplied from the ram to the tap is provided in the downward movement transmitting means and the tap holder.

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6. A tapping device according to claim 5, wherein an elastic member which can freely transmit downward motion of the ram is provided at the downward movement transmitting means to lower the tap holder against upward energizing force of the tap holder.

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7. A tapping device, comprising:

a tap holder provided in a shank body which can be freely attached to a rotating mold indexing device rotatably provided at a punch press so as to be

movable in the vertical direction, the tap holder having a tap at its lower end and being provided so as to be movable only in the vertical direction and urged upwards; and

5 a downward movement transmitting means for transmitting downward motion of a ram provided at the punch press so as to be movable in the vertical direction to the tap holder; wherein

the downward movement transmitting means has a pressing means for pressing the tap holder downwards by fluid pressure supplied from the ram and a shock absorbing means.

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8. A tapping device according to claim 7, wherein a workpiece brace is rotatably provided at a lower end of the shank body.

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9. A tapping device according to claim 8, wherein an oil channel for guiding oil supplied from the ram to the tap is provided in the downward movement transmitting means and the tap holder.

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10. A tapping device according to claim 9, wherein an elastic member which can freely transmit downward motion of the ram is provided at the downward movement transmitting means to lower the tap holder against upward energizing force of the tap holder.

11. A punch press with a rotating mold indexing device for performing rotation indexing of a rotating mold, comprising:

25 a control motor for driving rotation of the rotating mold indexing device; and

a motor control means which can freely control the control motor in

response to rotation indexing of the rotating mold and tapping process by a tapping tool attached to rotating mold indexing device.

12. A punch press according to claim 11, wherein

5 the motor control means has a rotation direction switch means for stopping positive rotation of the control motor and switching to reverse rotation when it is detected that the control motor has rotated a predetermined number of times or that predetermined time has elapsed since start of positive rotation.

10 13. A tapping device, comprising:

a tap die for supporting a workpiece as opposed to a tap for performing tapping process with respect to a prepared hole formed in the workpiece;

15 an operator which is provided at the tap die and activated by the tap passing through the workpiece;

a sensor for detecting that the operator has been activated; and a sensor monitoring means for monitoring the state of the sensor.

14. A tapping device, comprising:

20 a tap die for supporting a workpiece as opposed to a tap for performing tapping process with respect to a prepared hole formed in the workpiece;

an operator which is provided at the tap die and activated by the tap passing through the workpiece; and

25 an air exhaust hole for ejecting air into a discharge hole in the operator at activation of the operator.

15. A tapping device according to claim 14, wherein
the air exhaust hole is directed to the discharging direction of the
discharge hole.